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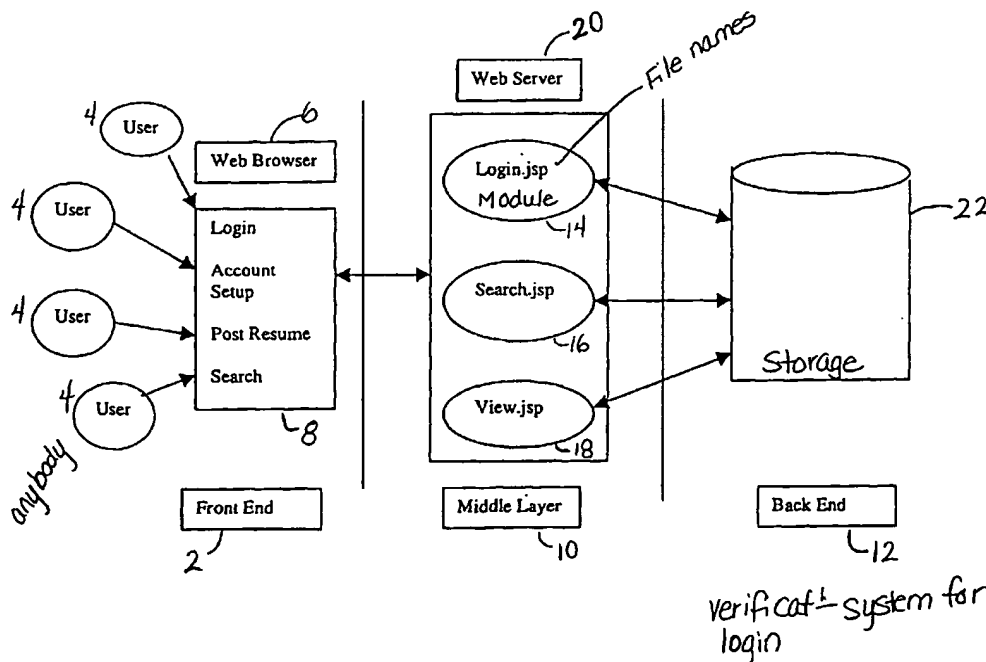
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(54) Title: **DATA MANAGEMENT SYSTEM AND METHOD**



(57) Abstract: A data management system and method is disclosed. The data management system can be utilized to access audio, visual or text data. The data accessed may include resumes of job seekers or descriptions of job providers. The internet may be utilized with the data management system to access the data.

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DATA MANAGEMENT SYSTEM AND METHOD

RELATED APPLICATION

This application claims priority based upon copending U. S. Provisional Application No. 60/211,534, filed June 15, 2000, and incorporated herein by
5 reference.

FIELD OF INVENTION

The present invention is generally related to classification and database technology. More specifically, the invention relates to a web-based data management system and method, where audio and/or video data is accessed from a data source via
10 direct connection to a local and/or global network, such as the Internet.

BACKGROUND OF THE INVENTION

Traditional approaches to seeking employment requires significant investment of time and financial resources, both for the employer and candidate. For example, a corporation in search of a worker with specified job skills, generally begins the hiring
15 process by placing an advertisement in the classified employment section of the newspaper. Subsequently, a human resource personnel would review the hundreds or thousands of job applications received, in order to narrow the search to a selected number of qualified candidates, before scheduling and conducting interviews. The

interviewing process oftentimes involve significant expense, particularly if the candidate must travel to the job site.

Alternatively, employment agencies are retained by employers to match job candidates to specific job criteria required by employers. However, most employment agencies also employ a manual system of matching personnel to job specification criteria, that is slow.

From the candidate perspective, a job seeker may spend hundreds of hours preparing a resume, mass-mailing resumes to, and interviewing prospective employers. For the job seeker, this too is generally a time-consuming, and laborious expensive process.

The following prior patents represent the state of the art, and are all hereby incorporated by reference:

U.S. Patent No. 5,117,353 to Stipanovich et al. discloses a software system for scheduling personnel suited to particular tasks for work on a temporary basis. Temporary help applicants are screened and their particular skills matched to client job orders. The system monitors jobs in progress, schedules work, trains temporary help workers, and report on the operation of the temporary help business.

U.S. Patent No. 5,164,897 to Clark et al. discloses an automated method of selecting qualified job candidates for positions defined by specific selection criteria based upon encoded job classification titles, industrial experience and special qualifications.

U.S. Patent No. 5,197,004 to Sobotka et al. discloses an automated computerized system for resume analysis using a combination of frame-based and rule-

based techniques, and further by incorporating probabilistic methods, to classify an applicant according to employment potential with a high degree of accuracy. An extractor, using a predetermined list of word patterns, the word patterns having been selected as indicative of skill in different job categories and assigned a weight
5 commensurate with its value as an indicator of skill in a particular job category or categories, locates those words and word groups found in the resume that match the patterns.

U.S. Patent No. 5,416,694 to Parrish et al. discloses a computer based data integration and management processing system and a method for workforce planning
10 and occupational readjustment that uses a number of databases for skill matching based on a behavioral skill analysis of target occupations.

The problem with one or more of the above-mentioned conventional automated systems is the reliance exclusively on keyword searching, whereby certain key words that relate to the job criteria are hopefully matched with key words with the job criteria.

15 An additional problem with one or more of the prior art references is impreciseness. That is, use of key words is very imprecise because job titles and "buzz" words, particularly in technology industries, have meanings that vary from employer to employer, and even from region to region.

Yet another problem in one or more of the prior art references is that the systems
20 are limited by misspellings, which is very common in large databases. As a result, potentially qualified candidates are overlooked in a search. Additionally, in order to

avoid missing a candidate, the undesirable task of performing a line-by-line search of every file, is required.

SUMMARY OF THE INVENTION

5 It is a feature and advantage of the present invention to provide an automated web- and/or network-based audio/visual approach that reduces the shortcoming of the above approaches.

It is another feature and advantage of the present invention to provide an improved automated approach to the problems of work force hiring/interviewing and management that facilitates easy, efficient and convenient access by all users.

10 It is another feature and advantage of the present invention to provide an improved automated approach that is inexpensive.

It is another feature and advantage of the present invention to provide an improved automated approach that is manageable and practical in its implementation.

15 It is another feature and advantage of the present invention to provide an improved automated approach that does not require additional software in its implementation.

It is another feature and advantage of the present invention to provide an improved automated approach that is flexible in providing the user with real time information in support of the overall desired interviewing and management process.

20 It is another feature and advantage of the present invention to provide an improved automated approach that will enable a user to handle an increased participant

load in the workforce hiring/interviewing and management process with no impairment or degradation in selection effectiveness.

It is another feature and advantage of the present invention to provide an improved automated approach having an open architecture that will allow a variety of
5 uses depending on the types of data and/or databases employed for the matching activity.

The features and advantages of the present invention is accomplished by bringing a comprehensive information technology (IT) solution to a user at home or office, for example, that is seeking an efficient, inexpensive and user-friendly tool for selecting a
10 worker or employer.

More specifically, these features and advantages are achieved by a web- and/or network-based data management system and method whereby users of the system, such as job seekers or job providers, can provide, access and manipulate recorded video versions of their resume.

15 In one embodiment, the data management system and method of the present invention allows job providers and their representatives, such as human resource personnel, hiring managers or recruiters, to access, download or upload online audio and video data and/or data streams of potential employees explaining their skills, background and experience. Conversely, the present invention allows job seekers, such as
20 employees, contractors and project-based workers, the same online capabilities regarding potential employers describing their company, job criteria and working environment, for example.

Since, in one embodiment, the present invention is web-based, users can access the system's database of text, audio and/or video resumes and interviews from any place at any time. In addition, no software is required, other than what is needed to play audio/video clips, which is generally available (including downloadable) for free.

5 For the first time, job seekers and job providers alike can see and hear a candidate on line. For example, a job provider will now be able to judge presentation and communication skills of a desired candidate without the expense of travel or investing time via scheduling interviews or telephone screens.

 The data management system and method of the present invention is developed
10 in a three-tier architecture. This architecture consists of a front-end for user interface; middle tier software; and a back-end for storing all forms of text, audio and/or video data and/or data streams.

 In one embodiment of the present invention, users can register into the data management system and enter pertinent information, including contact details, salary and
15 location expectations and work status. Users will then enter pertinent details regarding skills and experience as well as a text version of the resume. Also, users will be given instructions on how to record, edit or enter audio and video resumes to the database. Once all information is entered, users will have options to manage resumes, such as editing or deleting resumes.

20 In another embodiment of the present invention, users are able to logon through a web-browser, register and enter pertinent information, such as contact details, salary and location expectations and work status. Users will then enter pertinent details

regarding skills and experience as well as a text version of the resume. Finally, users are given instructions on how to record, edit and upload, for example, audio and video resumes to the database. Once all information is entered, users will have options to manage resumes.

5 In another embodiment of the present invention, users may register and/or logon to the data management system to gain access thereof as a subscriber. Subscribers include, but are not limited to, head hunters, HR personnel, hiring managers, recruiters, job seekers and job providers. Subscribers may also include individuals or their representatives seeking personal and/or business companionship.

10 Subscribers may enter a search criteria or search criteria list to narrow the field of potential candidates. Once again, subscribers are able to enter pertinent information, gain instructions on how to record, edit, enter/upload audio and video resumes, as well as exercise options on managing those resumes. Subscribers can also post job descriptions to which potential job seekers can browse and submit tailored audio-video
15 resumes.

 In all of the embodiments of the present invention, users and subscribers are able to see and hear candidates describing experience and/or personal information and skills in whole or in part. Users and subscribers may gain access to candidate contact information. Alternatively and optionally, users and/or subscribers are able to email a
20 candidate or candidates of choice through the data management system.

 The data management system and method of the present invention is configurable to fit the needs of its users. For example, one feature and option of the present invention

is the variability in timing and content of a video resume. That is, a video resume may be user-defined or subscriber-defined. For example, a college graduate candidate may upload a 15 second video resume, while another candidate with 20 years experience may upload a 60-second video resume. In another scenario, a job provider may request a 2-
5 minute video resume in a desired format and/or of a desired candidate. The system is able to accommodate differently sized and scripted video resumes depending on the differing skills, background and needs of each candidate and/or user.

The data management system and method of the present invention is also configurable to accommodate varying search criteria, which may include geographical
10 location, IT experience, number of years, specific core competencies, and the like. Alternatively and optionally, the present invention can accommodate searches on the audio component only and/or the video component of an audio and/or video resume. Audio search attributes, such as tone of voice and speed of speech, are enabled in the present invention by voice recognition technology.

15 The data management system and method of the present invention is also configurable to accommodate editing requests submitted by a job seeker or job provider. For example, for existing video and/or audio resumes on the data base, the present invention can edit portions of a audio, video and/or text resume to a requested resume format, which may require, for example, information on the three most recent
20 programming skills. Editing may be performed via content, resume length or resume type (i.e. audio vs video), and the like.

There has been outlined, rather broadly, the important features of the present invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be
5 described hereinafter and which will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the
10 following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of description and should not be regarded as limiting.

As such, those skilled in the art will appreciate that the conception, upon which
15 this disclosure is based, may readily be used as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

20 Further, the purpose of the foregoing abstract is to enable the U. S. Patent and Trademark Office and the public generally, and especially scientists, engineers and practitioners in the art, who are not familiar with patent or legal terms or phraseology,

to determine quickly from a cursory inspection, the nature and essence of the technical disclosure of the application. The abstract is neither intended to define the invention of the application, which is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

5 The above objects of the invention, together with other apparent objects of the invention, along with the various features of novelty that characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be had to the accompanying
10 drawings and descriptive matter, which illustrates preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 illustrates a high level block diagram of one embodiment of the architecture of the data management system and method of the present invention.

15 FIGS. 2A-2C is a block diagram of one embodiment of the front end of the present invention.

NOTATIONS AND NOMENCLATURES

The detailed description that follows may be presented in terms of program procedures executed on a computer or network of computers. These procedural

descriptions and representations are the means used by those skilled in the art to most effectively convey the substance of their work to others skilled in the art.

A procedure is here, and generally, conceived to be a self-consistent sequence of steps leading to a desired result. These steps are those requiring physical manipulations of physical quantities. Usually, though not necessarily, these quantities take the form of electrical or magnetic signals capable of being stored, transferred, combined, compared and otherwise manipulated. It proves convenient at times, principally for reasons of common usage, to refer to these signals as bits, values, elements, symbols, characters, terms, numbers, or the like. It should be noted, however, that all of these and similar terms are to be associated with the appropriate physical quantities and are merely convenient labels applied to these quantities.

Further, the manipulations performed are often referred to in terms, such as adding or comparing, which are commonly associated with mental operations performed by a human operator. No such capability of a human operator is necessary, or desirable in most cases, in any of the operations described herein which form part of the present invention; the operations are machine operations. Useful machines for performing the operation of the present invention include general purpose digital computers or similar devices.

The present invention also relates to apparatus for performing these operations. This apparatus may be specially constructed for the required purpose or it may comprise a general purpose computer as selectively activated or reconfigured by a computer program stored in a computer. The procedures presented herein are not inherently

related to a particular computer or other apparatus. Various general purpose machines may be used with programs written in accordance with the teachings herein, or it may prove more convenient to construct more specialized apparatus to perform the required method steps. The required structure for a variety of these machines will appear from
5 the description given.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Figure 1 is a high level block diagram of one embodiment of the architecture of the data management system and method of the present invention. The first tier of the three-tier architecture is the front-end, which is the interface between a user and the
10 system. It consists of the screens that the user enters into through and the contact that the user views. The front-end screens primarily provide point and click buttons for entering and retrieving information.

The technologies employed for the development of the front-end screens from the client side may include, but are not limited to, HTML, XML, Javascript, VBScript,
15 Java Applets and Java Beans, CORBA, stand alone web application, Macromedia tools, ActiveX, Adobe tools used to develop front-end web pages, COM/DCOM, and CWL. Development of the front-end from the server side may include, but is not limited to, Perl, C, C++, Java, python, tcl/tk, Jpython, all versions of Rexx, ASP, JSP, PHP, Servlets, all scripting and programming languages used for CGI programming, Java
20 Beans, COM/DCOM, and ActiveX. Additionally, miscellaneous tools supporting client and server side programming may include, but are not limited to Coldfusion, zope, and

all web application servers. The front-end screens allow a user of the system to login, setup an account, post a resume or job description /opening and searching capabilities, for instance. That is, all functionalities that the system provides is visible to the user at the front end.

5 The middle layer 10 performs the operations requested by the user 4 and serves as the interface between the front-end 2 and the back-end 12. It converts user-entered information, such as contact or search information, into a format easily stored, accessed and manipulated by the back end 12. Generally, the middle layer 10 comprises a plurality of program modules such as a login 14, search 16 or view 18 module that
10 performs login, search and viewing operations, respectively. Each module may comprise a plurality of files based on the desired functionality. Optionally, middle layer operations may be performed via a web server 20. The middle layer may employ technologies including, but not limited to, Java servlets, JDBC, and server side programming to accomplish various tasks. In addition, the middle layer 10 may employ CORBA,
15 COM/DCOM, RMI, RPC, Message queuing servers, and Directory servers to accomplish its tasks.

 The back-end 12 generally consists of storage 22 where all user information and audio and video data, in the form of audio and/or video resumes, are stored. Video resumes may be stored in many different formats, including but not limited to JPEG,
20 AVI, and GIF. In addition to storing video files along with other pertinent user information, the database storage 22 is capable of storing text versions of resumes. It is a comprehensive relational database management and storage system that collects and

stores all the information from the front end. The storage of text documents in the database storage 22 will allow for the text documents, including the resumes, to be searched using keywords. It can be housed coincidentally with the middle layer or can be located remotely from the middle layer. The back-end 12 may employ, but is not limited to, all RDBMS, ODBMS, DBMS, flatfile databases, and inmemory databases to accomplish its tasks. In addition, Oracle 8/8i may be utilized for managing the data stored in the databases.

Figures 2A-2C outline a more detailed embodiment of the above-mentioned system and method in more detail. Figure 2A illustrates a block diagram of the process flow at the front-end of the data management system. The general process begins with a user inquiry at the system's main page, as at step S30, which may include corporate logo, a brief description of the system, advertisement(s), disclaimer(s), and the like. Optionally, the main page may include a web site logo, and a brief description of what the web site offers. Additionally, the main page may include icons or links to register for or enter a variety of available services.

Upon access at the system's main page, a determination is made whether the user is registered (S32). If so, the user is prompted for login information, which may include a login identification and password (S34). On the other hand, if the user is not registered, the user may register at this stage (S36).

At step 38 (S38), a system check is performed to determine if registration is successful. If registration is unsuccessful, including situations in which users refuse to

register, access is denied (S40), and the user is prohibited from proceeding any further. If the registration process is successful, the user is prompted for login information (S34).

Upon successful completion of the registration and login procedures, in one embodiment of the present invention, a user has an option to select, among other options, whether to use the system as a job provider, such as an employer, or as a job seeker (S42).

As shown in FIG. 2B, if the job seeker selection is made, a user is greeted with the Job Seeker Main Page (S44). Alternatively and optionally, the Job Seeker Main Page may include icons or links to register for a variety of other available services. These services are also available for users already registered.

Alternatively and optionally, a job seeker may be prompted to a Job Seeker Register Page (S46), which requires job seekers to enter pertinent information, such as name, address, telephone number(s), email address(es), salary and relocation expectations, and work status. The information may optionally include credit card/billing information. The Job Seeker Register Page then chooses a login identification for each job seeker, and allows a job seeker to choose his/her own password. Once appropriate login ID and password information are entered, job seekers can access site services.

From the Job Seeker Main Page and/or Job Seeker Register Page, the user is prompted to proceed the Resume Management Page (S48), which allows job seekers to access links to different pages in order to manage their resume(s). Links may include Add, Delete, Edit and the like.

For example, an Add link may allow a job seeker to upload audio/video resume via a resume template. This link also provide another link to uploading instructions for first-time users.

5 The Delete link provides job seekers with a button or icon to delete their resume from the database. Job seekers may also be made to affirm their wish to delete their resume, before actual deletion occurs.

The Edit resume link allows job seekers to upload edited portions of the audio/video resume, or to replace an existing resume with another one.

10 Additionally, the Resume Management Page may further include access links to different pages, such as a resume upload instruction page, a view resume page, or a search job page. More specifically, for example, the resume upload instruction page provides job seeker users with instructions on how to record and upload resume to the system's database. The view resume page, for instance, allows users to view a resume. The search jobs page allows job seekers to enter search criteria and view a list of
15 links/icons to job postings from the database.

Referring to Figure 2C, if the employer selection is made, a user is greeted with the Employer Main Page (S50), which may include appropriately similar features of the Job Seeker Main Page. Alternatively and optionally, the Employer Main Page may include icons or links to register for a variety of other available services. These services
20 are also available for users already registered.

Alternatively and optionally, an employer may be prompted to an Employer Register Page (S52), which requires employer to enter pertinent information, such as

corporation or organization name, address, telephone number(s), contact person(s), email address(es), and credit card/billing information. The Employer Register Page then chooses a login identification for each employer, and allows an employer to choose its own password. Once appropriate login ID and password information are entered,
5 employer can access site services.

From the Employer Main Page and/or Employer Register Page, the user is prompted to proceed to the Resume Management Page (S54), which allows employers to access links to different pages in order to manage their corporate resume(s). Links may include Add, Delete, Edit and the like.

10 For example, an Add link may allow an employer to upload audio/video corporate resume via a resume template. This link also provide another link to uploading instructions for first-time users.

The Delete link provides employers with a button or icon to delete their resume from the database. Employers may also be made to affirm their wish to delete their
15 resume, before actual deletion occurs.

The Edit resume link allows employers to upload edited portions of the audio/video corporate or organizational resume, or to replace an existing resume with another one.

Additionally, the Resume Management Page may further include access links to
20 different pages, such as a resume upload instruction page, a view resume page, a resume search page, or a search results page.

More specifically, for example, the resume upload instruction page provides employer users with instructions on how to record and upload organizational resumes to the system's database. The view resume page, for instance, allows users to view a resume. The resume search page allows employers to enter search criteria based upon
5 desired skills and background, for example, and view a list of links/icons to candidate resumes from the database. The search results page provides links to all candidate resumes matching an employer's search criteria in the database.

Using the feature of an Individual Resume Page, for instance, resumes are displayed with an audio and/or video component on this page. Employers can view
10 and/or listen to all or part of a resume, which is generally based on a template. Employers can also use links to a candidate's page or an Email Candidate Page, to instantly send an email to the desired candidate.

Alternatively and optionally, an employer user may be prompted to proceed to a Job Management Page, where the user can choose to Add, Delete and Edit any of their
15 particular job openings/descriptions by clicking relevant buttons.

There are many alternative features encompassed by the data management system of the present invention. Those features include, and are not limited to, an authentication and/or verification system, a payment module/system, text, audio and video searching capabilities, voice recognition capabilities, system integrity checking
20 protocols for text, audio and visual components.

Moreover, the data management system of the present invention is not limited to job providers and job seekers. The present invention has application to any activity predicated on matching user supply information with demand information.

Furthermore, the data management system of the present invention can be
5 accommodated on any network (i.e. an inter-network, an intra-network or a global network).

What is claimed:

1. A database management system, comprising:
an input means for inputting a request for employment data, wherein the employment data is at least one of audio, visual and text data;
5 at least one software program; and
a storage for storing the employment data, wherein the at least one software program accesses the data in response to the request input in the input means.
2. The system according to claim 1, wherein said request is one of a request to enter employment data, view employment data, hear employment data, and retrieve
10 employment data.
3. The system according to claim 1, wherein said employment data is of a job seeker.
4. The system according to claim 1, wherein said employment data is of a job provider.
- 15 5. The system according to claim 1, wherein said storage accommodates databases.
6. The system according to claim 1, wherein said input means is an web browser.
7. A method for linking job providers with job seekers, comprising:
storing at least one of audio, visual and text data in a database;
accessing said database, utilizing a software program, in response to a request
20 by at least one of a job provider and a job seeker for at least one of audio, visual and text data; and

providing said at least one of an employer and a job seeker with said at least one of audio, visual, and text data.

8. The method according to claim 7, wherein said accessing said database is accomplished using an Internet.

5 9. The method according to claim 8, wherein said request is input utilizing a web browser.

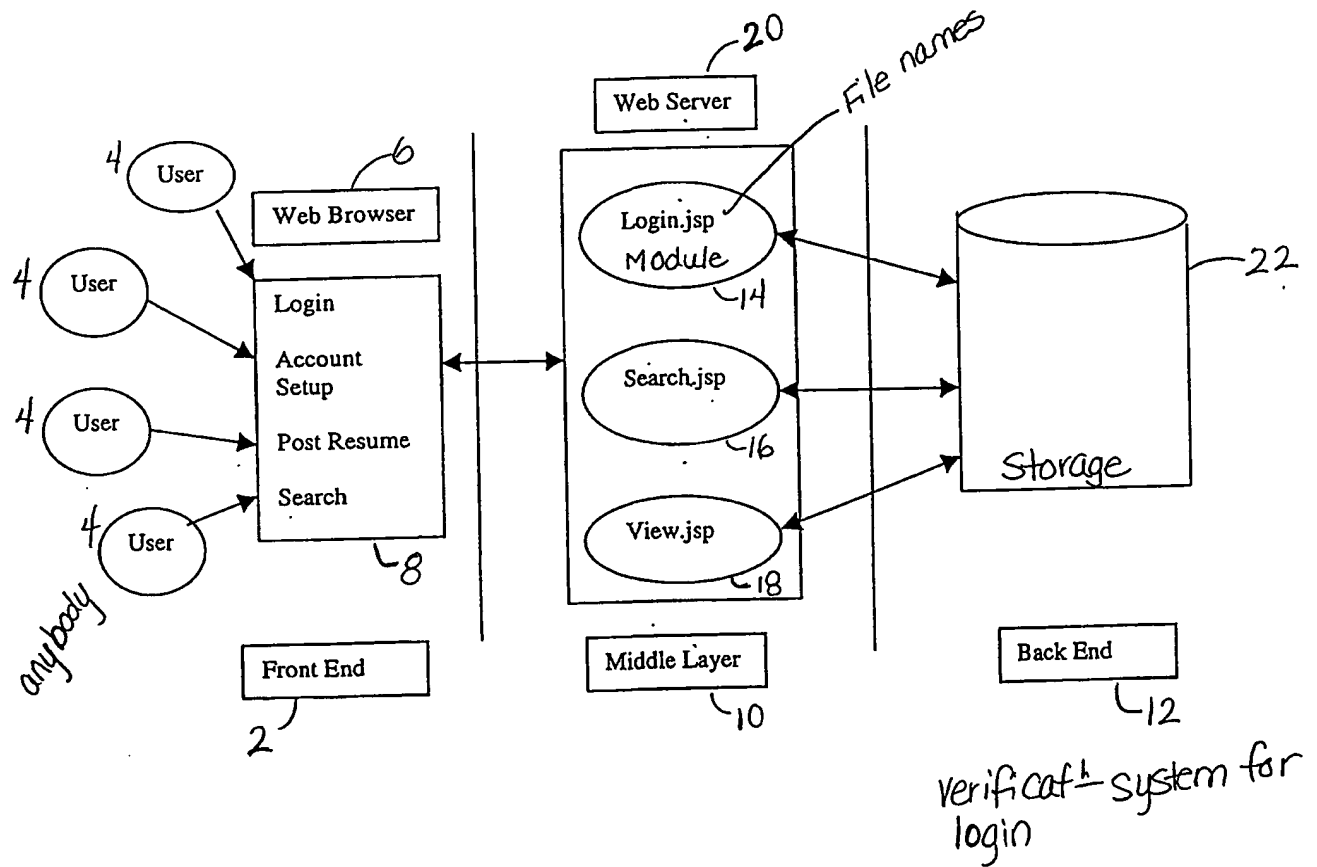


Figure 1

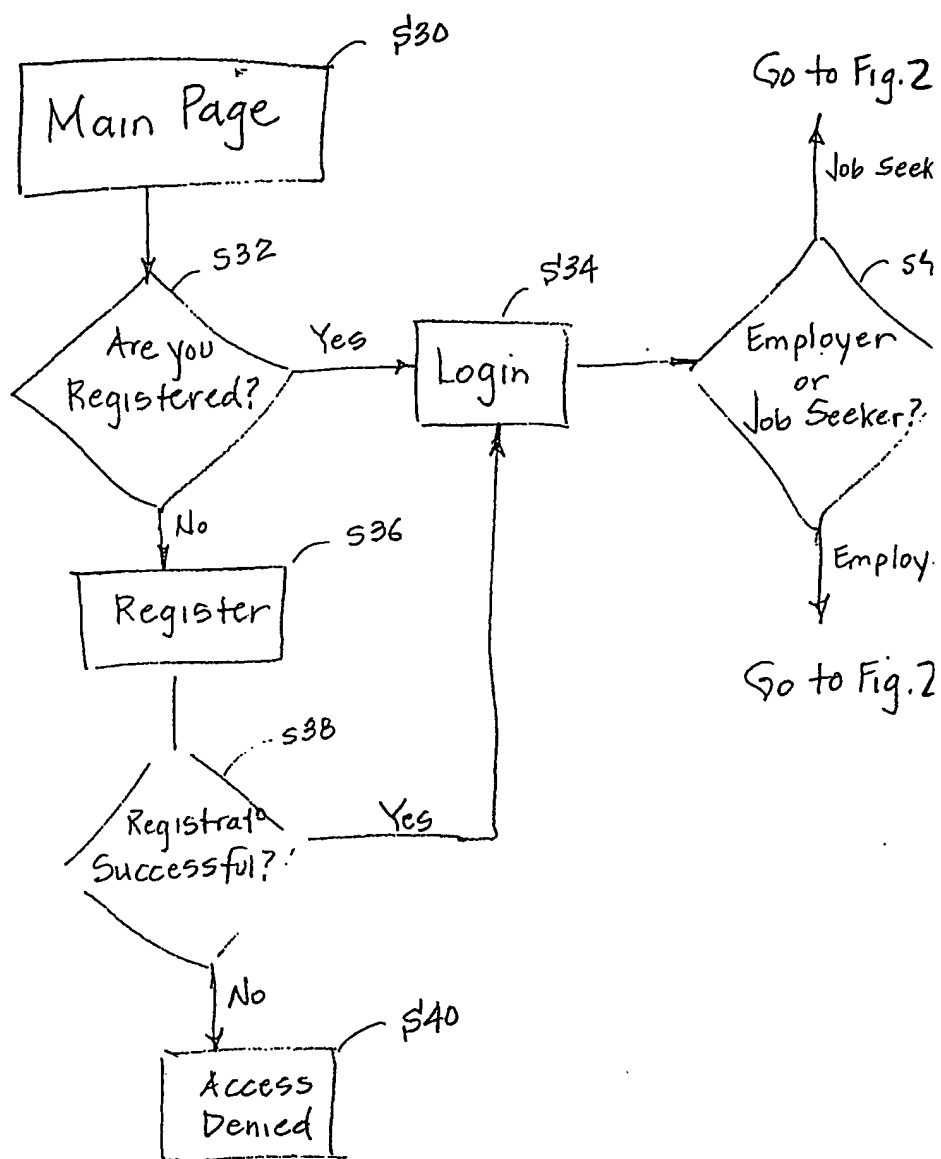


Figure 2 A

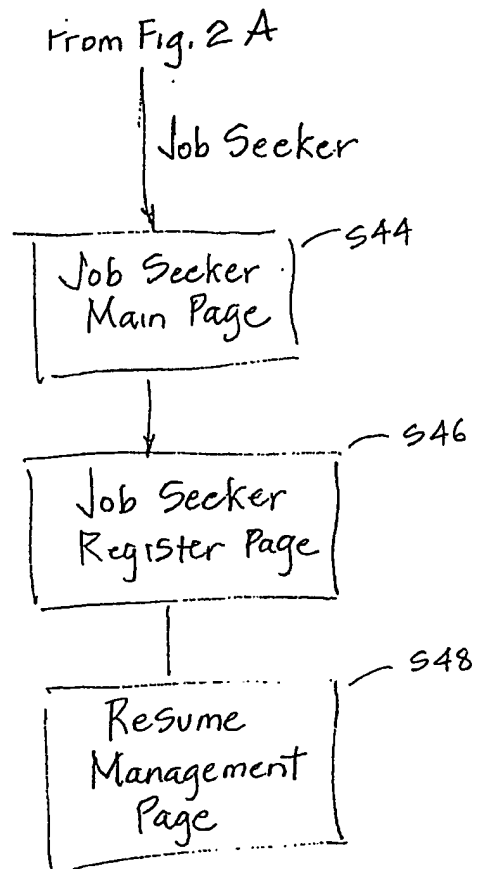


Figure 2 B

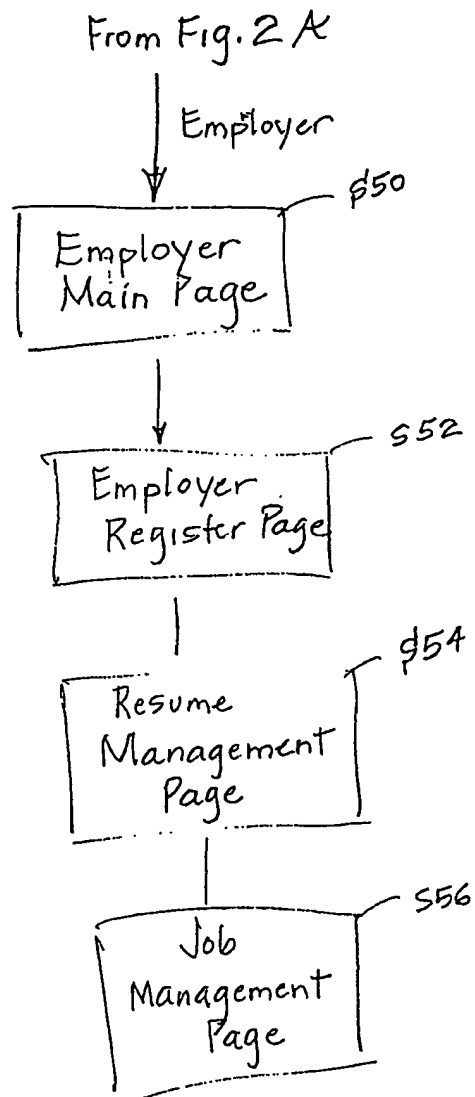


Figure 2C